THE ENVIRONMENTAL PROBLEMS OF ICT DEVELOPMENT

Olga Volk
Sumy State University, Sumy, Ukraine

Information and communication technologies (ICT) have been a driver for development in the knowledge economy. Government, civil society and the private sector in many countries are making a concerted effort to create a favorable enabling environment for innovation in ICT. This includes a wide array of issues including ICT policy, intellectual property laws, education and training, creation of investment opportunities etc.

ICT is helping us share and map environmental information, develop more active networks, and make more informed and accurate decisions. However, those same computers may bring about a harmful fate for us all. Piles of waste computers are accumulating in the EU, Japan, the US, India, and China.

The International Association of Electronics Recyclers projects that 1 billion computers will be scrapped worldwide by 2010, at a rate of 100 million units per year. About 40% of the heavy metals, including lead, mercury and cadmium, in landfills come from electronic equipment discards. The health effects of lead are well known; just 1/70th of a teaspoon of mercury can contaminate 20 acres of a lake, making the fish unfit to eat. The number of electronic products entering the waste stream is projected to increase dramatically unless reuse and recycling options expand.

Electronic waste, "e-waste" or "Waste Electrical and Electronic Equipment" ("WEEE") is a waste type consisting of any broken or unwanted electrical or electronic appliance. Recyclable electronic waste is sometimes further categorized as a "commodity" while e-waste which cannot be reused is distinguished as "waste". Both types of e-waste have raised concern considering that many components of such equipment are considered toxic and are not biodegradable. Responding to these concerns, many European countries banned e-waste from landfills in the 1990s.

E-waste is now the fastest growing component of the municipal solid waste stream because people are upgrading their mobile phones, computers, televisions, audio equipment and printers more frequently than ever before. Mobile phones and computers are causing the biggest problem because they are replaced most often. In Europe e-waste is increasing at three to five percent a year, almost three times faster than the total waste stream. Developing countries are also expected to triple their e-waste production over the next five years.

The European Union would further advance e-waste policy in Europe by implementing the Waste Electrical and Electronic Equipment Directive in 2002 which holds manufacturers responsible for e-waste disposal at end-of-life. Similar legislation has been enacted in Asia, with e-waste legislation in the United States limited to the state level due to stalled efforts in the United States Congress regarding multiple e-waste legislation bills.

The United States generates more e-waste than any other nation, according to the Environmental Protection Agency. More than 4.6 million tons of it entered U.S. landfills in 2000, and that amount is projected to grow fourfold in the next few years.

Some of that waste is recycled. For example, steel, aluminum and copper are often stripped from outdated machines and reused in newer models. But even recycled parts come at a price. An estimated 50 to 80 percent of e-waste collected in the United States for recycling is exported to areas such as China, India or Pakistan, where workers taking apart the old machines are handling toxic chemicals that can pose serious health problems.

Obsolete computers are a valuable source for secondary raw materials, if treated properly, however if not treated properly they are a major source of toxins and carcinogens. Rapid technology change, low initial cost and even planned obsolescence have resulted in a fast growing problem around the globe. Technical solutions are available but in most cases a legal framework, a collection system, logistics and other services need to be implemented before a technical solution can be applied. Many materials used in the construction of computer hardware can be recovered in the recycling process for use in future production. Reuse of tin, silicon, iron, aluminum, and a variety of plastics – all present in bulk in computers – can reduce the costs of constructing new systems. In addition, components frequently contain copper, gold, and other materials valuable enough to reclaim in their own right.

Most major computer manufacturers offer some form of recycling, often as a free replacement service when purchasing a new PC. At the user's request they may mail in their old computer, or arrange for pickup from the manufacturer. There are also a variety of donation options, including charities which may offer tax benefits. Some manufacturers are beginning to assume greater responsibility for what happens to their products after they become obsolete. For example, Dell, Hewlett-Packard and Gateway have recently expanded programs to collect old computer equipment.

Reduce, reuse, recycle has become a common, environmental slogan. In the case of e-waste it also represents an important, easy-to-remember hierarchy of recycling benefits.

1. Reduce the consumption of products that ultimately become e-waste by maintaining older equipment or purchasing higher quality products with a longer useful life.

2. Reuse products by selling them or donating them to others, especially computer re-use organizations, extending their useful life and keeping them out of the waste stream.

3. Recycle your unwanted electronics with an environmentally responsible recycler who will either refurbish them for reuse, or break them down to commodity level where they can be used again as raw materials.